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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

BEVAN et al.

Serial No.: 09/486,715

Filed: May 24, 2000

Group Art Unit: 1743

Examiner: Y. Gakh

For: ANALYTICAL METHOD AN APPARATUS THEREFOR

RESPONSE

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

This is in response to the Official Action of November 25, 2002, in connection with the above-identified application. The period for response has been extended to expire on February 25, 2003, by the filing herewith of a Petition for a Two Month Extension of Time and payment of the required fee.

The Official Action requires restriction under 35 U.S.C. 121 and 372. It is urged that the application contains two separate and distinct inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. The Group I invention is said to be drawn to a method of continuous titration and the Group II invention is drawn to an analytical device. In accordance with the requirement in the Official Action, Applicants elect the Group II invention including claims 6-12, drawn to an analytic device for examination on the merits in the present application. The election is made with traverse.

The Restriction Requirement appears to be based on the Examiner's understanding of U.S. Patent 5,192,509. The Examiner believes that this reference discloses or renders obvious all of the features of the apparatus of claim 6, thus removing all patentable, technical features common to the claims and resulting in a lack of unity. Applicants most respectfully submit that the cited patent does not disclose or render obvious the claimed invention and therefore request the lack of unity objection be withdrawn.

Applicants most respectfully submit that the operation of the device of the '509 patent is explained in detail in column 4, particularly from lines 4-24. From this passage it is apparent that a constant volume of sample solution and a much less (presumably also constant) volume of indicator are pumped into the delivery tube along with a variable, regulated flow of titrant. The example given is a constant flow of hydrochloric acid and phenolphthalein indicator with an increasing amount of sodium hydroxide titrant. The amount of titrant is increased until the color change shows that the equivalence point has been passed, at which stage the amount of the sample stream (hydrochloric acid) is increased to bring the mixture back towards the equivalence point.

There is no suggestion in '509 that as the amount of one component is increased, the amount of another should be decreased so as to maintain a constant volume, as claimed in the present invention. In fact, it is apparent that the total volume must increase throughout this procedure and, as the internal volume of the apparatus will not be changing, the flow rate through the apparatus must therefore be increasing during this procedure. By contrast, in the claims of the present application filed herewith, as the proportion of one component of the test mixture stream is increased, the proportion of another component is decreased so as to maintain a constant volume for, as defined in claim 3, a constant flow rate through the spectrophotometric detection zone). The apparatus claims have the means to obtain these results and are therefore novel over '509.

In addition, Applicants note that maintaining constant volume by decreasing one component of the text mixture stream whilst increasing another, as in the present invention, is particularly advantageous because it lends itself to the generation of linear gradient in the chemical environment of the test mixture stream. As described in the present application, this may take the form of a linear pH gradient, a linear increase in hydrophobicity of the test stream or a linear variation on the proportions of one of more bindery agents, salt solutions or buffers, etc. Indeed, as the overall volume is maintained by adjustment of components in inverse proportion, one may achieve linear variation of one aspect of the mixture (such as pH) whilst other aspects, such as ionic strength or the overall chemical composition of the mixture may be maintained constant. This is discussed, for example, at the passage bridging pages 4 and 5 of the present application, as published. In particular, examples, this may be achieved with the aid of linearising buffers as described in the application and claimed in new claims 13 and 14.

There is nothing in '509 to suggest to a skilled man that he should attempt to maintain constant volume let alone provide the necessary means in the apparatus to achieve this result during a continuous automatic titration and nothing to suggest the advantages of the present invention, as set out in the claims filed herewith, which can be achieved thereby. The claims therefore shown an inventive step over '509. Accordingly, it is most respectfully requested that the objection to the claims of lack of unity be withdrawn and all claims in the application be examined on the merits in the next Official Action.

In this regard, it is noted that the present application is the National Stage and the Examiner's attention is directed to the International Preliminary Examination Report which makes the determination that the international claims are patentable over the '509 reference both for novelty and inventive step which is basically the equivalent to unobviousness of the claimed subject matter. This is further evidence that there is no lack of unity in the claimed subject matter which all should be considered in the same application.

Applicants request confirmation that the drawings filed are acceptable in the next Official Action.

An action on the merits of all the claims now present in the application is most respectfully requested taking into consideration the Preliminary Amendment including the Information Disclosure making of record the references cited in the International Search Report.

Respectfully submitted,
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